Supplementary Material, Figure S1: ORS/VRP Mouse Phenotyping Service Summary Report

Genetic manipulation: Male *Spg20* +/+ (A, B, C) and *Spg20-/-* (G, H, I)

I. Body/Organ weights:

The following weights were obtained at necropsy:

Body	Heart	Liver	Brain
Thymus	Spleen	Kidneys	

The following comparisons of mutant homozygotes and wild types were made using single factor ANOVA (Microsoft Excel):

Body weight	Heart to Brain weight ratio
Brain weight	Liver to Brain weight ratio
Spleen to Brain weight ratio	Kidney to Brain weight ratio
Thymus to Brain weight ratio	Brain to body weight ratio

Results: No statistically significant differences in body weight. Mouse G is 19 grams lighter than its age matched control, mouse A because of paresis and likely difficulty in feeding.

Mutant mice have smaller total kidney weight, averaging 0.87 grams on average than wild type, averaging 0.95 grams. However *P*=0.07 and the significance is uncertain.

II. Hematology (see attached Excel file for complete data):

The following values were measured:

Hemoglobin	WBC count	Neutrophil count*	Eosinophil count*
Hematocrit	MCV	Lymphocyte count*	Basophil count*
RBC count	MCHC	Monocyte count*	Platelet count
MCH			

* = Absolute value

Results: No significant differences are present in hematological parameters. Mice B and I have high neutrophil counts. A reason is not found for mouse B. Suppurative rhinitis is the likely reason in mouse I. Mouse B also has circulating lymphocytosis.

III. Serum Chemistries (see attached Excel file for complete data):

The following analytes were measured:

Glucose	Calcium	AST	LDH
Cholesterol	BUN	Bilirubin, total	
Triglycerides	Phosphorus, inorganic	Protein, total	
Albumin	Alkaline Phosphatase	Uric Acid	
Amylase	ALT	GGT	

Results: Triglycerides are significantly greater in wild type mice, averaging 127.3 mg/dL vs mutant mice averaging 77.3 mg/dL. All values are within normal range. *P*=0.018

Uric acid is significantly higher in wild type, averaging 3.9 mg/dL vs. mutant mice averaging 2.0 mg/dL. *P*=0.015

IV. Gross Diagnoses: Mouse G had paresis of the right front leg and bilateral hind limbs on the day of necropsy. The subcutis is tacky. No other gross abnormalities are noted.

V. Histopathologic diagnoses (see attached report for full list of findings):

Unless noted in the report, the following organs were examined microscopically in all mice:

Skin	Thyroid glands	Kidneys
Lymph nodes	Spleen	Skeletal muscle
Salivary glands	Liver	Sciatic nerve
Thymus	Pancreas	Brain
Trachea	GI tract (all levels)	Spinal Cord
Esophagus	Reproductive tract	Femur, tibia and stifle joint
Lungs	Adrenal glands	Teeth
Heart	Nasal sinuses	Gall bladder
Ears	Urinary bladder	Bone marrow
Eyes	Harderian glands	Mammary glands (females)
Pituitary gland	Tongue	Parathyroid glands

Histologic findings:

The reason for paresis in mouse G is a mesenchymal neoplasm compressing the cervical spinal cord. It is composed of spindle to oval cells, compresses the spinal cord and tracks along nerve roots. It extends along the base of the brain and into the fourth ventricle. Rule outs include peripheral nerve sheath tumor, meningioma and histiocytic sarcoma.

Consistent differences between wild type and mutant mice are not found with H&E staining. Brain and spinal cord from mice A and G were also stained with luxol fast blue for myelin and cresyl violet for nerve body detail. Differences are not found aside from the tumor and results of tumor compression.

Two wild type and two mutant mice have mild to moderate centrilobular to midzonal hepatic lipidosis. Lipidosis indicates alteration in hepatocellular lipid metabolism. However, it can occur as a background lesion in certain mouse strains.

Mouse B has a cervical lymph node is enlarged with increased numbers of otherwise normal appearing lymphocytes. Invasion of the capsule or other tissues in not present precluding a diagnosis of lymphoma. This may be related to the circulating lymphocytosis in this animal.

Mouse I has suppurative rhinitis. Other incidental findings include ceroid-laden macrophages in adrenal glands, preputial gland inflammation, medial hypertrophy of pulmonary arteries, perivascular lymphoid infiltrates in various tissues, degenerative joint disease and pancreatic islet cell neoplasia.

VI. Conclusions:

Triglycerides may be greater in wild type compared to mutant mice. This may be related to genotype if the gene in question has affects on lipid metabolism. Kidney weights may also be genotype related. Uric acid may also be genotype related. The neoplasm may be genotype related. Other findings are unlikely to be genotype related.

Differences in myelination or other structures of the nervous system are not seen. A caveat is that only two mice from each age group are compared and the total sample size is small.